Open PhD position

Title:
Exploration of energy-proportional distributed systems

Keywords:
Computer Architectures, Energy-Efficiency, Distributed Systems, Heterogeneous and Adaptive Architectures

Description:
Energy-efficiency has emerged as a primary concern in several areas such as microelectronics and computer sciences. Significant research effort is being put forth to define innovative solutions at several levels ranging from technology (FinFET, FDSOI, emerging non-volatile memory technologies), logic (adiabatic) to software layers of compute systems. At the compute architecture level, recent research directions such as energy-proportional systems or normally-off computing are notably regarded as promising and constitute the foundations of the proposed Ph.D. topic.

The ADAC group of LIRMM is intensively investigating disruptive approaches for furthering the observed benefits of such systems. The principle of these investigations lies in regarding energy as a finite resource that may be allocated in the same way as memory and processing resources. From such capabilities emerge novel optimization problems (energy rationing, scheduling, mapping, etc.) that are envisioned to be explored in the proposed thesis using a preliminary existing physical prototype and some others yet to be defined on the basis of the learnings. The related research directions are open, especially concerning possible application domains, and will be decided on the basis of the opportunities.

The successful applicant should have a solid background in either computer architecture or electrical engineering or computer science. The duration of the Ph.D. funding is 3 years.

The LIRMM lab is a cross-faculty research entity of the University of Montpellier and the French National Center for Scientific Research (CNRS). Located in Montpellier (France), LIRMM is one of the largest multi-disciplinary research laboratory in Europe. Its Microelectronics department carries out cutting-edge research in the fields of design and testing integrated systems and micro-systems, with a focus on architectural aspects, modeling and methodology.

Contact:
Applications (including a CV, academic records, motivation letter and appreciation letters if available) are to be sent to the following person:

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